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- (54) Car air-conditioner device  
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## SPECIFICATION

1. Title of the Design: Car air-conditioner device

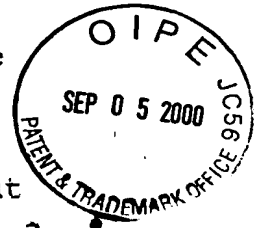
2. Claims

1. Car air conditioner which comprises: blow-out ports for blowing out air, separately, from at least 2 positions in the car; an air passage through which air passes separately from an air intake port by way of an evaporator to each of the abovementioned blow-out ports; a common heater core through which passes, to warm the air, a portion of the cool air which flows through each of the air passages; and a warm-air passage in which warm air is taken out from respective separate outlets of the common heater core to, in the vicinity of the abovementioned blow-out port, flow into the cool air of the abovementioned air passage, which air-conditioner device is characterized in that blind shutters are provided in the abovementioned warm-air passage and, in the case where at least one of the blow-out port air passages is in a full cool state, the abovementioned blind shutters of the warm-air passage leading to this air passage are successively cut off.

3. Detailed Description of the Design

The present design relates to a car air-conditioner device, in particular, to the improvement of an air conditioner with a configuration in which, by way of example, there are at least two independent points for air conditioning such as the front seat side and rear seat side.

Examples of conventional air-conditioner devices of this type include the one shown in Figure 1. In the figure, reference 1 is an air conditioner air intake port, and references 2 and 3, which are first and second blow-out ports, are deployed so that the first blow-out port 2 blows out warm air or cool air to the front seat side and the second blow-out port blows out warm air or



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cool air to the rear seat side; and reference 4 indicates a defroster blow-out port.

The configuration is such that, a blower motor fan 5 is provided in the downstream side of the air intake port 1 and, the air suctioned in by way of the air intake port 1 by the blower motor fan 5 is cooled and has the moisture removed by an evaporator 6, following which it is separated to flow through, respectively, a first blow-out port side air passage 8 and second blow-out port side air passage 9 partitioned by a partition plate 7 and, in accordance with the open/close position of an air mix door 10 on the passage 8 side and an air mix door 11 on the passage 9 side, part of the air passes through a common heater core 12 and is heated, and, by way of first and second blow-out port side warm-air passages 14, 15 partitioned by a partition plate 13 provided in the outlet side of the heater core 12, it is mixed with the cool air of the first and second blow-out port air passages 8, 9 forming a warm air of a temperature correspondent to the degree of opening of the air mix doors 10 and 11, and the warm air which flows through the first blow-out port side air passage 8 and second blow-out port side air passage 9 respectively is separated by a through-connecting door 16 and partition plate 13 to be blown out from the first blow-out port 2 and second blow-out port 3 without mixing. As a result, separate warm air from the first and second blow-out ports 2, 3 are blown out to respective positions within the car. In addition, when the through-connecting door 16 is in a position in which it closes blow-out port 3, this results in the air which is to be discharged from the blow-out port 3 being converged on the blow-out port 2. Accordingly, by using the blow-out port 2 for the front part seat, and the blow-out port 3 for the rear part seat, if there are no passengers in the rear seat, this can be used to increase the air conditioner capability in the front seat. In addition, it is configured in such a way that the air is

sent by way of a defroster blow-out port 4 using a defroster door 17.

However, in a conventional car air conditioner device such as this, there are problems in that, because the structure is one in which one heater core is jointly used, the air directly following the heater core is suctioned at the post heater core flow side whereby performance is reduced at times of full cooling.

The present design is one which focuses on this problem of the prior art, the objective of which is to solve the above-described problems by the deployment of blind shutters in the air passage directly following the heater core outlet wherein, in the case where the air mix door is in the full cool state, the blind shutters are closed whereby the heat from the heater core is successively cuts off.

A description of the present design is given below based on the diagrams.

Figure 2 shows one embodiment of the present design; the same sections as the conventional structure are represented by the same reference symbols as used in Figure 1, and the description thereof is omitted. The present example, as shown in the figure, is configured in such a way that a plurality of rotary-type blind shutters 18, 19 are respectively deployed in one row in a first blow-out port warm-air passage 14 and a second blow-out port warm-air passage 15 directly following the heater core 12n outlet, and by interlocking with an open/close operation of the air mix door 10 and 11, the blind shutters 18, 19 are opened and closed.

By virtue of the above-described configuration, as shown in Figure 2, when the first blow-out port 2 side is in a full cool state with the air mix door 10 in the fully open position as shown by the dotted line, the other blow-out port 3 side forms a warm air region and, even if the air mix door 11 is in a half-open position as shown by the dotted line, by virtue of the fact that the blind shutter of the first blow-out port warm-air passage

14 is closed, a blow out of adequately cooled air from the first blow-out port 2 can be achieved without flow of the warm air from the heater core into the first blow-out port passage 3 occurring.

Figure 3 shows another embodiment of the present design and, in this embodiment, the inlet side air mix door of the heater core 12 is omitted and, rotary type blind shutters 20 and 21, and 22 and 23 are deployed respectively in first and second blow out side air passages 8 and 9 and first and second blow-out port side warm air passages 14 and 15 and, by the control of the respective opening/closing positions of each of the blind shutters 20, 21, 22, 23, the mixing ratio of the cool air and warm air is separately adjusted in the air passages wherein, when the one blow-out port 3 is in the full cool state, by controlling the blind shutter 21 of the second blow-out port air passage 9 to a fully open position and the blind shutter 23 of the second blow out side warm air passage 15 to a fully closed position, the heat from the heater core is successively cuts off whereby an increase in the temperature of the full cool side blow out air can be prevented.

As is described above, according to the present design, because it is a configuration in which blind shutters are provided respectively in each warm-air passage leading from a common heater core outlet to each blow-out port, and the flow of warm air to the blow-out ports is able to be separately and successively cuts off, in the case where one blow-out port is in the full cool state and the other blow-out port is in the warm air region state, an increase in the temperature of the full cool side blow out air can be prevented.

In addition, by the provision of rotary-type blind shutters instead of an air mix door, the size of the air conditioner device can be reduced and the structure simplified.

#### 4. Brief Description of the Diagrams

Fig. 1 is a schematic diagram of the structure of a conventional air conditioner device;

Fig. 2 is a schematic diagram of the air conditioner device based on the present design;

and Figure 3 is a schematic diagram which shows another embodiment of the present invention.

- 1 Air intake port
- 2, 3 First and second blow-out ports
- 4 Defroster blow-out port
- 6 Evaporator
- 7 Partition plate
- 8, 9 Air passages
- 10, 11 Air mix door
- 12 Heater core
- 13 Partition plate
- 14, 15 Warm-air passages
- 16 Through-connecting door
- 17 Defroster door
- 18, 19, 30, 31, 22, 23 Blind shutters

Fig. 1

Fig. 2

Fig. 3

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